

before and 2 months after injections of botulinum toxin A (all P -values > 0.076).
Discussion and conclusions.— We observe no change in muscle strength for both the injected muscle and his antagonist, two months after the injections of botulinum toxins. We cannot confirm our initial hypothesis. An earlier assessment might be needed to identify this variation.

References

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Effect of shock wave therapy on muscle spasticity in children with cerebral palsy

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Keywords: Shock wave therapy; Muscle spasticity; Cerebral palsy

Aim of the study is to evaluate the effect of radial shock wave therapy on reducing muscle hypertonia in plantar flexor muscles in children with cerebral palsy.

Material and methods.— Eleven children with spastic plantar flexor muscles as a result of cerebral palsy were included in the study: 7 boys and 4 girls, age range 2–7, mean age 3.54 ± 1.013 . Radial shock wave therapy was applied to the gastrocnemius and soleus muscle (BTL-5000 shock-wave series): 1000 shots to each gastrocnemius and soleus muscle.

Clinical and instrumental methods were used for the evaluation of the results: passive range of motion, modified Ashworth scale, pedobarometry before the treatment, immediately after it, 2 and 4 weeks later.

Results.— After a single shock wave stimulation, a significant increase in passive range of motion (with 17.13° , $t=8.81$, $P<0.05$) and a significant decrease in the Ashworth scale (from baseline mean 2.81 SD $[0.65]$ to 2.11 SD $[0.33]$; $t=6.19$, $P<0.05$) were observed immediately after treatment. This effect was persistent two weeks later. The increase in passive range of motion was with 15.95° , $t=5.22$, $P<0.05$. The decrease in the Ashworth scale was preserved 2.11 SD $[0.33]$ ($P<0.05$). After placebo stimulation no significant difference was observed.

Conclusion.— Radial shock wave therapy could be appropriate adjuvant treatment for reducing muscle spasticity in plantar flexors in children with cerebral palsy. These are preliminary results and further study is needed to follow the long-term effect.

Further reading

Amelio E, Manganotti P. Effect of shock wave stimulation on hypertonic plantar flexor muscles in patients with cerebral palsy: a placebo controlled study. *J Rehabil Med* 2010;42:339–343.

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Analytical and functional analysis of the upper limb in children with hemiplegic cerebral palsy

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Keywords: Cerebral palsy; Children; Hemiplegia; Upper limb; Assessment

a specific evaluation, which should apprehend movement efficacy and quality, and above all the usefulness of the assisting arm. To be relevant, this evaluation has to be based on appropriate and approved tools, which must display reproducibility and be sensitive to changes to measure the efficacy of therapeutic procedures.

Objectives.— We review the benefits and specificity of the following evaluation tools or scales:

—MACS [1], a global functional classification of self-initiated ability to handle objects;

—**analytical** evaluations:

1— surgically oriented classifications: **Zancolli**: for wrist and finger; **House, Matev and Corry**: for the thumb;

2— **“BCB”** (Bard and Chaléat) classification: covers the potential clinical patterns of CP, in spontaneous attitudes or in activity, and describes major patterns of the UL and hands types with muscular involvement for a treatment algorithm.

—**Functional** evaluations:

1— **QUEST** (Quality of Upper Extremity Skills Test), validated with younger children (18-months to 8-year-old);

2— **PRS** (Physician Rating Scale): simple 9-items scale scored out of 24 assessing the UL functional motricity;

3— **MUUL** (Melbourne Unilateral Upper Limb Assessment) [2]: video-recorded test battery validated for children aged 5–15. The abilities of one of the UL are separately assessed with 16 items, including approaching, grasping, handling and releasing functions;

4— **AHA** (Assisting Hand Assessment) [3], validated for 18-month to 12-year-old children. Measures and describes how effectively a child uses his affected hand in bimanual activities. The child is videorecorded while playing with toys in semi-structured play sessions (22 items).

Conclusion.— The combined use of analytical and functional classification offers a relevant observation, guiding therapeutical choices and treatment readjustment.

References

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Scapulo-humeral motion in hemiplegic cerebral palsied children

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Keywords: Shoulder; Scapula; Kinematics; Cerebral palsy; Children

Objective.— The aim of this study is to quantify the thoraco-scapulo-humeral motion in hemiplegic cerebral palsied children (HCP) compared with healthy children.

Materials and methods.— Ten children HCP and 10 typically developing children matched for age (11.8 and 11.2 years respectively) and gender (5 females) were included. 3D kinematics of the thoraco glenohumeral was collected in an optoelectronic system (VICON). The protocol used has been validated in children. It combines an acromial marker cluster, a static calibration of the scapula, and using the Euler XZY sequence for the kinematics of the glenohumeral joint [1,2]. The children carried out three planar movements (flexion, abduction, horizontal adduction) and 3 tasks (hand to head, hand to contralateral shoulder, hand to back). A paired Wilcoxon test was performed at 0% and 100% of the task as well as range of motion during the movement.

Results.— Children with HCP showed significant differences in scapulothoracic and glenohumeral kinematics in the 3 planes of the space according to the tasks.